THREE GROUPS OF TURKEYS FROM SOUTHWESTERN ARCHAEOLOGICAL SITES

By Charmion R. McKusick[1]

ABSTRACT: The study of a minimum of 6713 whole or partial turkey skeletons from 95 southwestern archaeological sites dating between ca. 300 B.C. and A.D. 1723 has resulted in the differentiation of three groups of turkeys that are separable from each other and from all other turkeys known to have occurred in the Southwest:

(1) The Small Indian Domestic, *Meleagris gallopavo tularosa,* first appeared between ca. 300 and 150 B.C. in the Mogollon Culture Area of west central New Mexico coincidentally with the establishment of a stable agricultural food supply, peaked in the Eastern Periphery Pueblos, and became extinct with the fall of the Pueblos in 1672.

(2) The Large Indian Domestic, *Meleagris gallopavo merriami,* appeared in the Anasazi Culture Area in northeastern Arizona about A.D. 400 along with the beginnings of agriculture. The Large Indian Domestic is the predominant race of turkey in southwestern archaeological collections dating from its first appearance about 400 A.D. until 1723, the last known date for large flocks of Indian turkeys.

(3) Merriam's Wild Turkey, also *Meleagris gallopavo merriami,* may have been present as a feral form of the Large Indian Domestic as early as A.D. 500, and feral turkeys clearly identifiable as Merriam's Wild Turkey existed shortly before A.D. 600.

The study of turkeys from southwestern archaeological sites summarized herein was undertaken as the result of the discovery in 1967 that the remains of over 900 turkeys recovered from the excavation of Mound 7, Gran Quivira National Monument, New Mexico, were unlike any previously studied from southwestern archaeological sites. This unusually homogeneous group of small, gracile-boned turkeys with humped backs and short tarsi raised the question of the time and place of their domestication, and the identity of the wild progenitors of southwestern Indian turkeys in general. As is often the case when several investigators are working on the same problem without each other's knowledge, they tend to arrive at the same conclusion simultaneously, but from different directions. The late A.W. Schorger, an outstanding authority on the wild turkey, wrote to T.W. Mathews of the Southwest Archaeological Center, Globe, Arizona, in the summer of 1969 seeking information relative to a desiccated short-shanked turkey with a fully-feathered neck from a southwestern archaeological site that he was studying. Mathews supplied him with the series of measurements I had taken from the Mound 7 turkeys. From a comparison of characters and measurements it became obvious to all three of us that the Tularosa mummy was a specimen of the small breed known only from skeletal elements at Gran Quivira. Based on our combined data, Schorger (1970:168–170) described the Tularosa Turkey as a new extinct subspecies, *Meleagris gallopavo tularosa,* in January of 1970.

Although Schorger's enquiry resulted in a concerted effort to solve the turkey problem, the problem itself had been around a long time. I had discussed the Indian domestic turkeys, their origin and development with the late Lyndon L. Hargrave, Erik Reed, and Mathews in 1963, but no plan of research was proposed. The subject came up again when Alden C. Hayes submitted his avian collection from the excavation of Mound 7 at Gran Quivira National Monument for identification. To complete this study, I found it necessary to isolate diagnostic characters of the three groups of Indian turkeys. Mathews confirmed the validity of these characters in producing reliable identifications. A.W. Schorger reviewed the entire project before his death, and wrote to us that our findings agreed with his. Small Indian Domestic Turkeys, Large Indian Domestic Turkeys, and Merriam's Wild Turkeys may be distinguished from each other by comparison of characters of the mandible, pelvis, coracoid, scapula, humerus, carpometacarpus, femur, and tibiotarsus, as well as by means of measurements of sample populations. Illustrations of the age stages of the three groups of turkeys (which are pertinent to the archaeologist's reconstruction of the yearly round of human activity), the diagnostic osteological characters of the three groups, and the means of measurements of the sample populations are found elsewhere (McKusick 1980).

The capability of segregating the various groups of turkeys that occur at prehistoric habitational sites in the Southwest made it possible for the first time to test the various hypotheses of turkey origins and distribution.

1. Reed (1951), citing Hargrave's observation that turkey pens are found in areas where wild turkeys do not now exist and where there is no evidence of there ever having been any, hypothesized that turkeys were hunted in areas where they were available as wild birds and were raised in areas where they were not.

2. Reed (1951) further hypothesized that turkeys were eaten mostly by the northern Anasazi and their cultural descendents.

3. Johnson (1965) hypothesized that hunting turkeys rather

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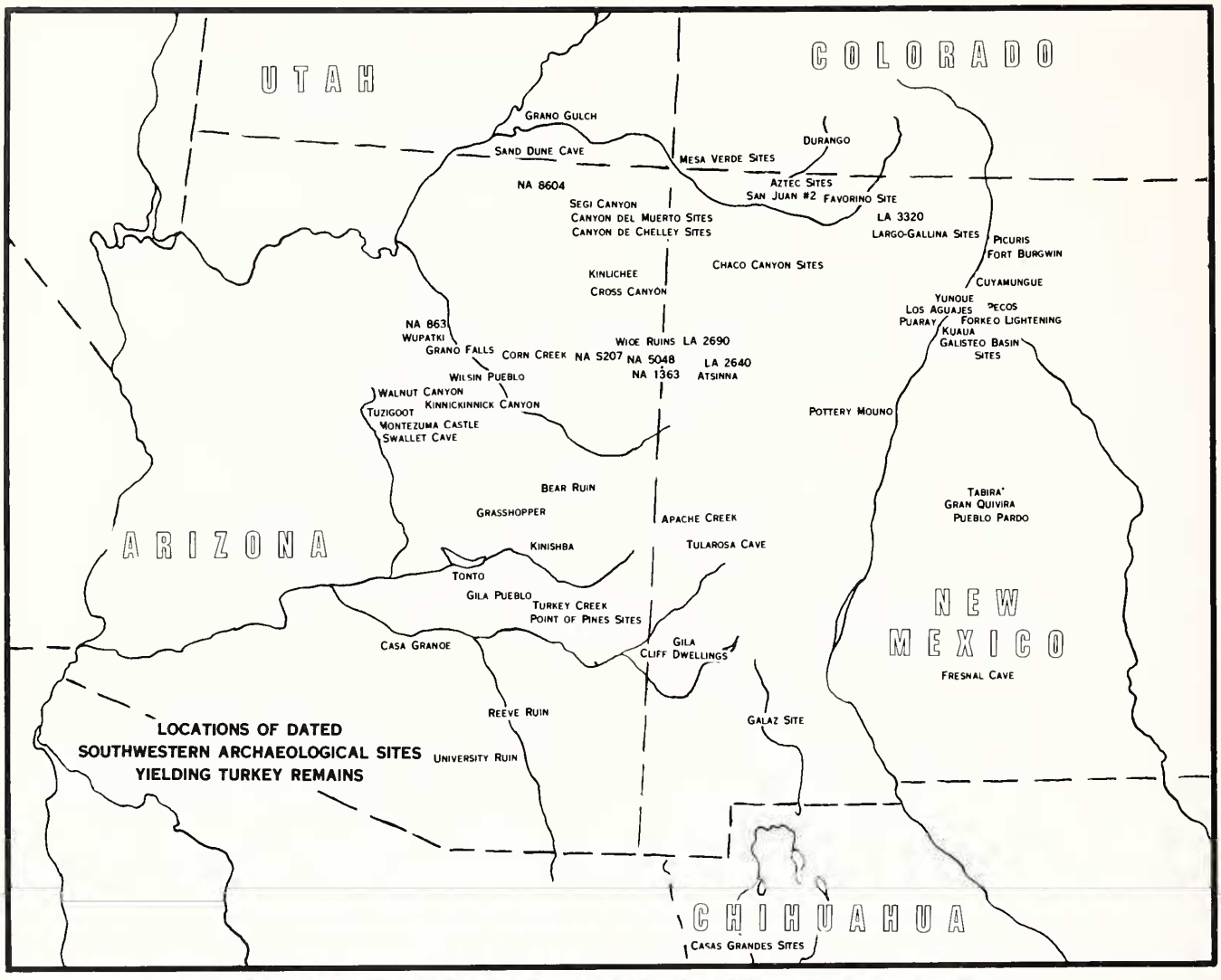

Figure 1. Locations of dated southwestern archaeological sites yielding turkey remains.

than raising them was a diagnostic trait of Western Pueblo Culture.

4. Hargrave hypothesized (pers. comm. 1963) that aberrant turkey bones recovered from southwestern human habitational sites represented remnants of Pleistocene forms. He did not attempt to explain how the Indians had obtained these forms, or why they had supposedly persisted into the fourteenth century A.D.

5. Hargrave discussed (pers. comm. 1963), and Rea (this vol.) tested, the hypothesis that modern Merriam's Wild Turkeys are descendents of feral domestic turkeys, rather than that Indian domestic turkeys are the descendents of indigenous wild forms.

6. McKusick hypothesized in 1968 (Western Archaeological Center Avian Files) that Indian domestic turkeys were introduced into the Southwest as part of the Formative Level Cultural Complex or Complexes (corn, beans, squash, permanent housing, pottery, social stratification) from some place or places outside the Southwest.

Recently, A.M. Rea's interest in *Meleagris crassipes* reopened the issue of the southwestern specimens identified as Pleistocene and pre-agricultural turkeys. This project made it necessary for me to re-examine all turkey bones from southwestern archaeological human habitational sites that had been set aside as Pleistocene remnants, just as Rea was re-examining all pre-Formative Stage specimens that had been formerly identified as *M. gallopavo*. Rea did not provide me with a hypothesis to test in this project, rather he asked for a review of the specimens and an objective evaluation of their identification.

METHODS

In this study, variables such as age stages and sexual dimorphism were determined before subspecific differences or differences between wild and domestic forms of the same subspecies were considered. I raised poults of the modern table breed, *Meleagris gallopavo gallopavo,* to adulthood to secure data on differential rates of growth of males and females through their developmental stages. I obtained skeletons to represent the desired osteological age classes from free-ranging domestic turkeys. In addition, C.A. Thomas of the Southwest Archaeological Center enlisted the aid of Gila County, Arizona, turkey hunters. I examined turkeys from both spring and fall hunting seasons, collecting head, feet, and feather samples, noting the color of vane, rachis, and legs, recording

the sex, and tagging the carcass for matching of the bones and samples after the birds were roasted and eaten. Seven age stages were defined to answer specific questions for the archaeologist about aboriginal turkey usage, turkey culture, and the yearly round of human activity (McKusick 1979).

Information on age stages and sexual dimorphism also proved useful in the proper identification of a series of specimens that Hargrave had accumulated at the Southwest Archaeological Center, Globe, Arizona, from collections studied between the early 1930's and 1968. These had been referred to Pleistocene forms in spite of the fact that they were found in collections from human habitational sites in the Southwest, some of which have been dated as late as A.D. 1340.

Data on the Small Indian Domestic Turkey, *Meleagris gallopavo tularosa,* are based on an unmixed population of 923 individuals from Mound 7, Gran Quivira National Monument, New Mexico. Data for the Large Indian Domestic Turkey, *Meleagris gallopavo merriami,* are based on an early, unmixed, classic population of 32 individuals from Tse-ta'a, Canyon de Chelley, Arizona. Archaeological samples of Merriam's Wild Turkey, also *Meleagris gallopavo merriami,* are too fragmentary to be useful in establishing ranges of measurements; therefore, modern wild specimens were employed.

As the study progressed, it seemed advisable to test methods and criteria against as many collections from as many areas of the Southwest and as many time periods as possible. Accordingly, every turkey specimen available for loan from southwestern archaeological sites was borrowed, examined, and where possible, measured.

SOUTHWESTERN TURKEYS IN TIME AND SPACE

I derived the time data and geographical locations found in this section from file records and publications of the institutions that loaned the specimens I examined, and from personal communication with individuals who performed or were familiar with the excavations of the sites from which the specimens were recovered. Site locations are indicated on Fig. 1.

For the purpose of easy comparison, I shall discuss the sites by the time periods established by Willey (1966:188) for cultural designations of the Anasazi Culture, since in no other cultural area did turkeys assume such an important role in the economy and life of the people. It is recognized that the populations of some areas, such as Chaco Canyon, reached a given cultural level earlier than the main stream of Anasazi development, while others, such as the western Basket Maker, lagged considerably. To the non-archaeologist reader, cultural development at some sites may seem slightly out of phase with the main stream of southwestern development, but this is a well-recognized phenomenon that in our modern day culture is illustrated by the contrast between the cultural manifestation in Manhattan, a medium-sized midwestern town, and a backwoods farm in Appalachia. What is important in this study is the date of occurrence of the turkeys, their breeds, and their relationships to the inhabitants of the site at which they were found.

Proto-Agricultural and Basket Maker II

300 B.C. to A.D. 400, Fig. 2

The only occurrence of turkey feathers in the Southwest that has been referred to a Proto-Agricultural context is that reported from the excavation of Fresnal Cave, LA10101, near Cloudcroft, New Mexico, which dates from ca. 2500 B.C. to ca. A.D. 1 (Vorsila Bohrer pers. comm.). Turkey feathers from this cave are mainly the irridescent tips of body feathers; only a few specimens are from wing coverts or the tail. The collection includes rachis sections stripped of their vanes in a manner associated elsewhere with the production of feather cordage. Therefore, I believe these turkey specimens represent a level of cultural development no earlier than Basket Maker II, and I have included them here despite the greater antiquity of the major portion of the collection.

In undisputed Basket Maker II levels, turkey feather blankets occur in addition to rabbit fur blankets in such areas as Grand Gulch, Utah; Durango, Colorado; and Canyon del Muerto, Arizona (Morris 1939:18). Excavations at Canyon del Muerto have also produced from a Basket Maker II level the headless mummy of a Small Indian Domestic (a "Tularosa Turkey") with vegetal cordage around its neck. It was dated at ca. A.D. 250 on the basis of associated cultural material by R.G. Vivian (Southwest Archaeological Center Photo Files). R. Richert, who is familiar with the circumstances of the find, believes this is a conservative date; i.e., the bird may be even older (Richert pers. comm.).

Bones of four Small Indian Domestics from Tularosa Cave, New Mexico, occur in Pre-Pottery Phase levels dated by Martin et al. (1952:483) at ca. 300 B.C. ± 150–200 years.

The more western Basket Maker II peoples of the Kayenta area of northeastern Arizona apparently were behind their eastern counterparts in the use of turkeys, since Guernsey and Kidder (1921:111) did not find any feather-string in these sites. I re-examined the feather collection from Woodchuck Cave, a Basket Maker II burial cave dated at A.D. 200 ± 100 years (Locket and Hargrave 1953). There are two specimens of passerine feather cordage, one a Z-twisted skin strip and the other a skin strip with feathers Z-wrapped on a two-ply Z-twist vegetal core, but only one specimen of whole-feather turkey wrapping (Specimen No. 3112/B6.30). No turkey bones were recovered from this cave, and turkey feathers are so few that it is probable that they were trade items, since wild turkeys are not known from this area at any time level. Du Pont Cave in Utah, dated by tree rings at A.D. 217 (Lockett and Hargrave 1953:31), contained no turkey cordage, only the type of cordage wrapped with strips of skin of small birds (Nusbaum et al. 1922:104).

Evidence of cultural lag is found at Sand Dune Cave near Navajo Mountain, Utah, where the Basket Maker II period is dated A.D. 300 to A.D. 700 (Hargrave 1970). Here are found only bundled turkey feathers, and no feather cordage even in a time period that was elsewhere Basket Maker III. In this case, far beyond the known range of wild turkeys, feathers are presumably those of domestic birds traded in from another area, probably Canyon de Chelley or Canyon del Muerto, Arizona.

Basket Maker III

A.D. 400–700, Fig. 3

Both at Mesa Verde, Colorado, and at Tse-ta'a in Canyon de Chelley, Arizona, the Large Indian Domestic Breed was predominant. Skeletal remains from this period show no indications of food use, and presumably the birds were used only for their feathers. Morris (1941:197, 201, 202) reported turkey pens between the Basket Maker III slab and pole houses ex-

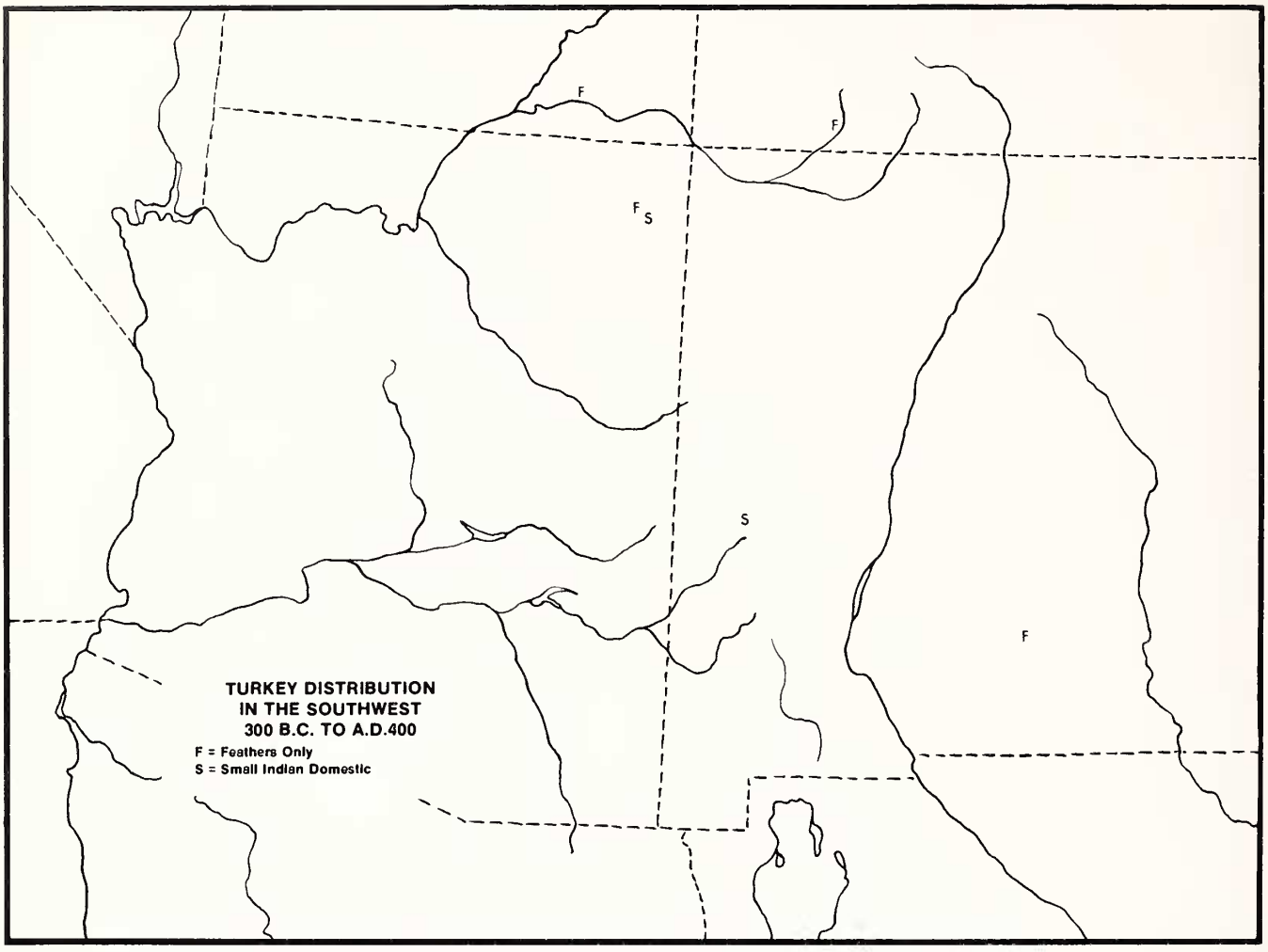

Figure 2. Turkey distribution in the Southwest from 300 B.C. to A.D. 400.

cavated at Tseahatso and the surrounding cave wall. Approximately 300 (Lee Abel pers. comm.) natural mummies of turkeys that had apparently died of old age were excavated from this cave. In addition, one young turkey that had suffered a broken leg was found. The injured limb had been set, bound with soft fiber, and splinted. In spite of this careful attention, the bird died and was buried with the splints still in place.

W.D. Lipe excavated the bones of Large Indian Domestic Turkeys from Site GG70-187, about 3 km east of Grand Gulch, Utah, associated with Basket Maker III cultural materials that probably date into the A.D. 600's. These are classic specimens that compare well with those from Tse-ta'a in Arizona.

Bones of Merriam's Wild Turkey were found at AZ P:16:1, Bear Ruin, in east central Arizona, with remains that date from the seventh century A.D. Two tubes cut from the tarsometatarsi of males, including the spur cores (Haury 1940:14, 116), represent specimens of extremely early worked turkey bone.

In the Point of Pines area of Arizona, a turkey bone was recovered from an early Circle Prairie Phase pit house that probably dates before A.D. 600 (Wheat 1954:179). I have referred it to Merriam's Wild Turkey.

Pueblo I

A.D. 700–900, Fig. 4

Information on Pueblo I turkeys is scanty. The only material examined is from Site 1205, Site 1678, and Badger House, all on Mesa Verde, Colorado; Tse-ta'a in Canyon de Chelley, Arizona; La 3427, the Favorino Site on the San Juan River, New Mexico; and La 3320, southwest of Dulce, New Mexico. Only the Large Indian Domestic Breed is represented. There is no reliable evidence of the use of turkeys other than for feathers in this period.

Guernsey (1931:92–93) reported finding feather cord robes in Pueblo I burials at Cave 1, Segi Canyon, in northeastern Arizona. Because fur cord robes were included in the same burials, it is probable that the feather cord examples were items of trade and that live turkeys were not yet known in the area.

Pueblo II

A.D. 900–1100, Fig. 5

During Pueblo II time the Large Indian Domestic Breed spread from its Four Corners homeland as far west as NA

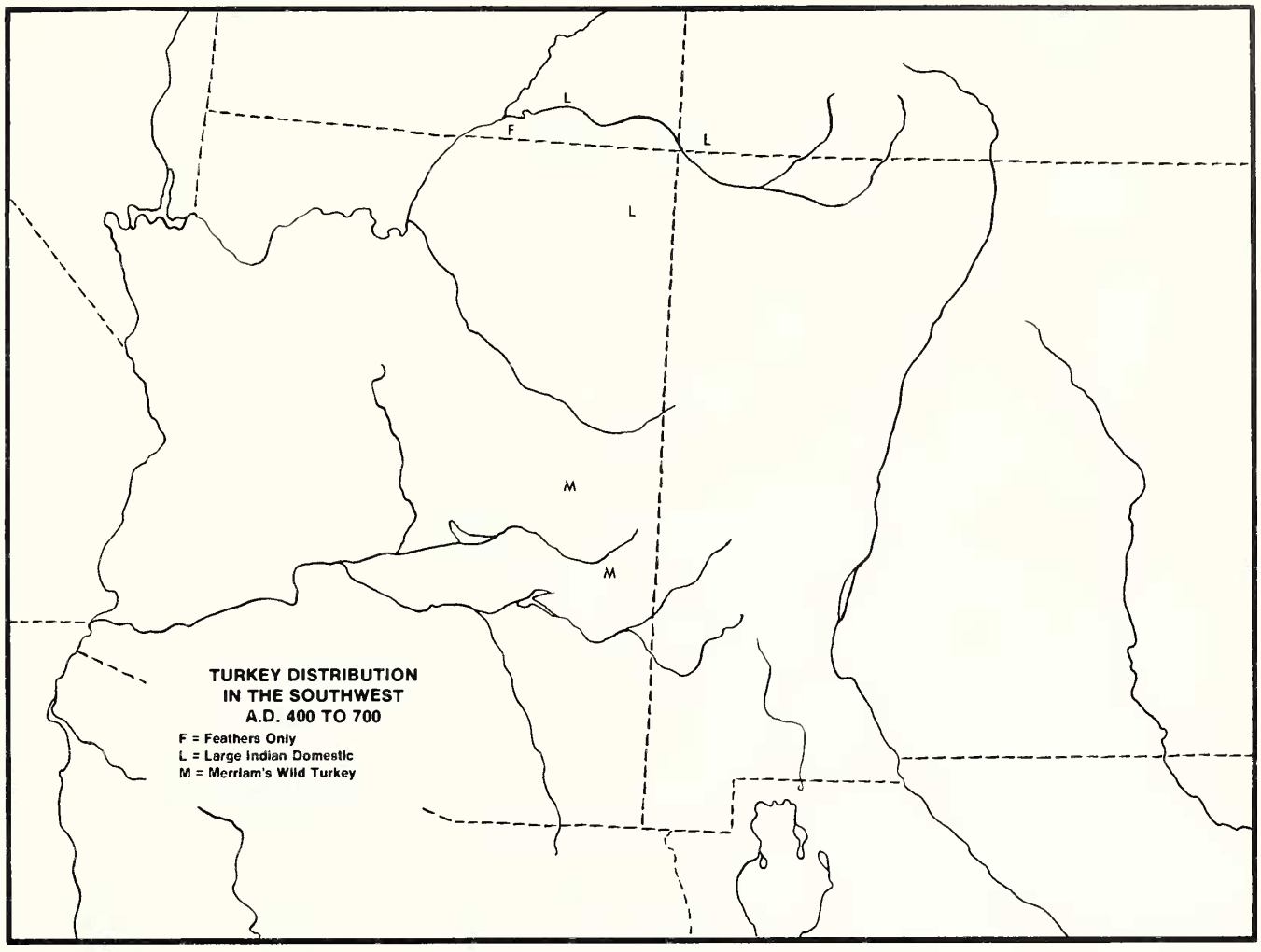

Figure 3. Turkey distribution in the Southwest from A.D. 400 to 700.

8604 near Kiet Siel, Arizona, east to TA 32 near Ranchos de Taos, New Mexico, and south to Casas Grandes, Chihuahua, Mexico, forming a T-shaped distribution.

In contrast to earlier levels that lacked turkey remains, Pueblo II and later levels at Tseh-So in Chaco Canyon, New Mexico, contained many turkey bones (Brand et al. 1937:101, 106). Burials of headless female turkeys were also found in the kivas at this site.

Tularosa Cave, although now included in the area where Large Indian Domestics were predominant, still yielded a feathered mummy of the Tularosa Turkey, or Small Indian Domestic. The occurrence of a Small Indian Domestic at this site may have cultural significance. Four desiccated poults of erythristic coloration and a specimen of bone from Merriam's Wild Turkey were also recovered from Tularosa Cave at levels dated at A.D. 1100 (P.S. Martin pers. comm.).

The one piece of stripped-vane cordage recovered from NA 863, Medicine Cave, in the area of Flagstaff, Arizona, may have been a trade item (Bartlet 1934:46); however, a turkey bone has also been found at a nearby site at the Grand Falls of the Little Colorado. I have referred the latter to the Large Indian Domestic Breed. These occurrences in the Sinagua Cultural Area are out of the main region of turkey raising, and turkeys never assumed any real importance.

Pueblo III

A.D. 1100–1300, Fig. 6

By Pueblo III times the Large Indian Domestic was generally known throughout the Southwest except in the Sinagua and Hohokam Culture Areas of Arizona. The Sinagua peoples had domestic turkeys available, but did not include turkey raising in their cultural complex. Turkey remains found in Sinagua sites were probably traded in from the north and east. The Hohokam peoples appear to have been even more disinterested, as no turkey specimens have been found in Hohokam sites except for two or three specimens from Salado cultural deposits, such as those at Casa Grande, Arizona.

The butchered and broken condition of Merriam's Wild Turkey bones recovered from sites along the Mogollon Rim during this time period indicates that wild turkeys were hunted to a limited extent along this upland area from the Galaz Site in southwestern New Mexico to Walnut Canyon in northern Arizona.

The Small Indian Domestic appeared at Gran Quivira as a homogeneous, well-standardized breed about A.D. 1275. It has been found in much smaller numbers in Pueblo III deposits at Mesa Verde, Colorado, and at Casas Grandes, Chihuahua, México.

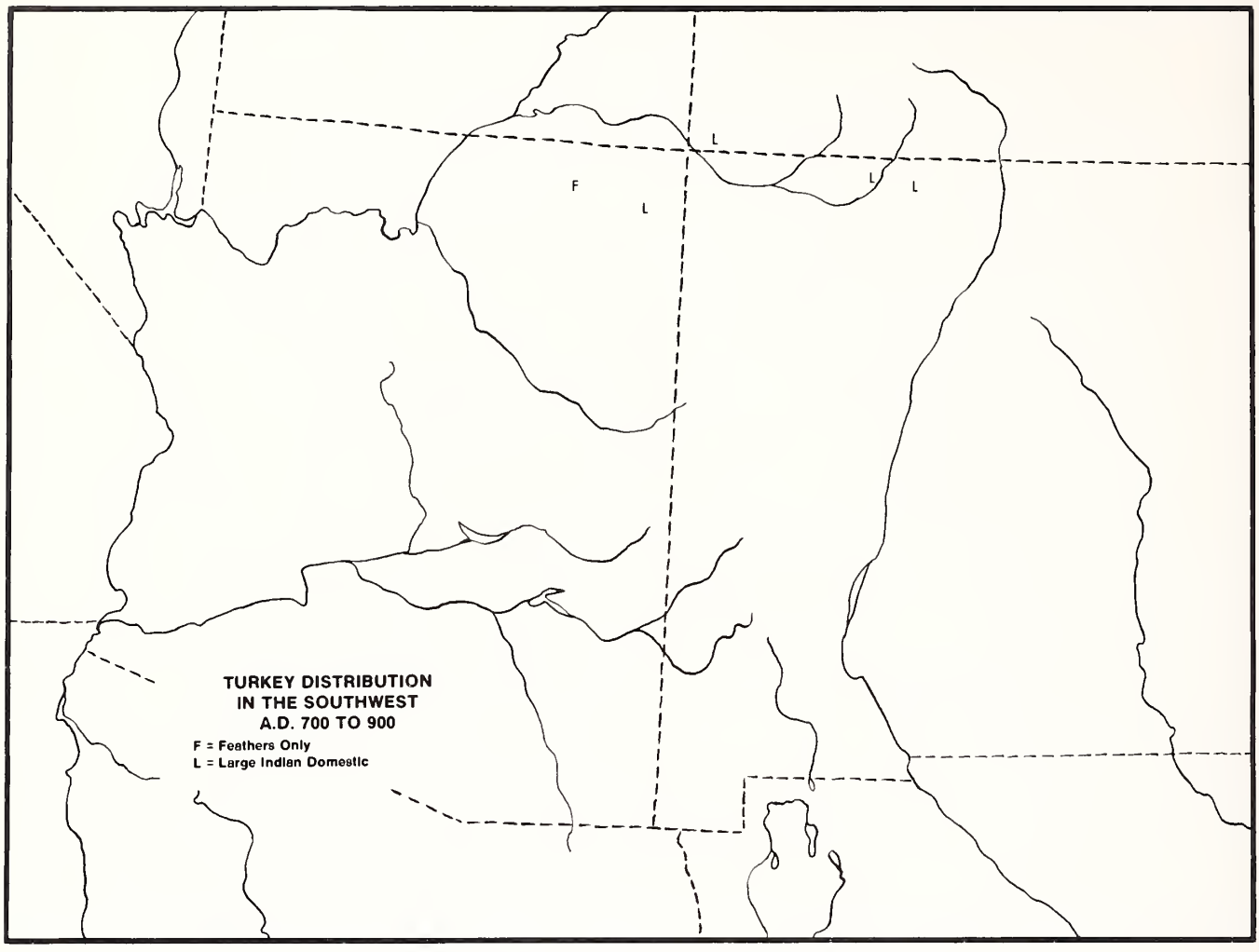

Figure 4. Turkey distribution in the Southwest from A.D. 700 to 900.

Pueblo IV

A.D. 1300–1700, Fig. 7

The large settlements in the Mesa Verde, Colorado; Canyon de Chelley, Arizona; and Chaco Canyon, New Mexico, areas were vacant by the Pueblo IV period. The center of turkey raising had moved south and east to the Rio Grande and the Eastern Periphery of the Southwest Cultural Area. Although the Large Indian Domestic was predominant, wild turkeys were hunted in the Point of Pines area and at Grasshopper in Arizona. The two specimens from the Verde Valley, Arizona, are also probably Merriam's Wild Turkey, which had been present just to the east as a feral form of the Large Indian Domestic since before A.D. 600.

The Small Indian Domestic Breed reached its peak at this time in central New Mexico at the Tompiro Pueblos of Gran Quivira, Pueblo Pardo, and Tabirá. It was still present at Casas Grandes, Chihuahua, México, in small numbers, along with the much more numerous Large Indian Domestics, until the fall of the city ca. A.D. 1340. Single specimens of the Small Indian Domestic have been found at the University Ruin and Reeve Ruin in Arizona (which date to ca. A.D. 1350), but turkey raising never assumed any importance in this area. An immature specimen from Casa Grande, Arizona, is definitely from a domesticated turkey but is too young to assign to breed. A turkey specimen from Gila Pueblo, Arizona, is so young that it cannot be assigned to breed, wild or domestic.

DISCUSSION OF HYPOTHESES

1. Reed's hypothesis that turkeys were hunted where they were available wild, and raised in areas where they were not.

Reed's discussion (1951) indicated that his thinking centers on the obvious evidence of domestication in the Anasazi Cultural Area. Certainly domestic turkeys were present in the Anasazi Area, but data indicate that they were not domesticated there, but were brought in as a well-established domestic breed from elsewhere.

However, Small Indian Domestics were known in the Mogollon Cultural Area about 500 years before they were known in the Anasazi Area, and about 700 years before the favored Anasazi breed, the Large Indian Domestic, appeared in that area.

Turkeys were hunted along the Mogollon Rim, but not early (indeed, there were none to hunt) or in any great numbers. A few were hunted by about A.D. 600 after the Large Indian

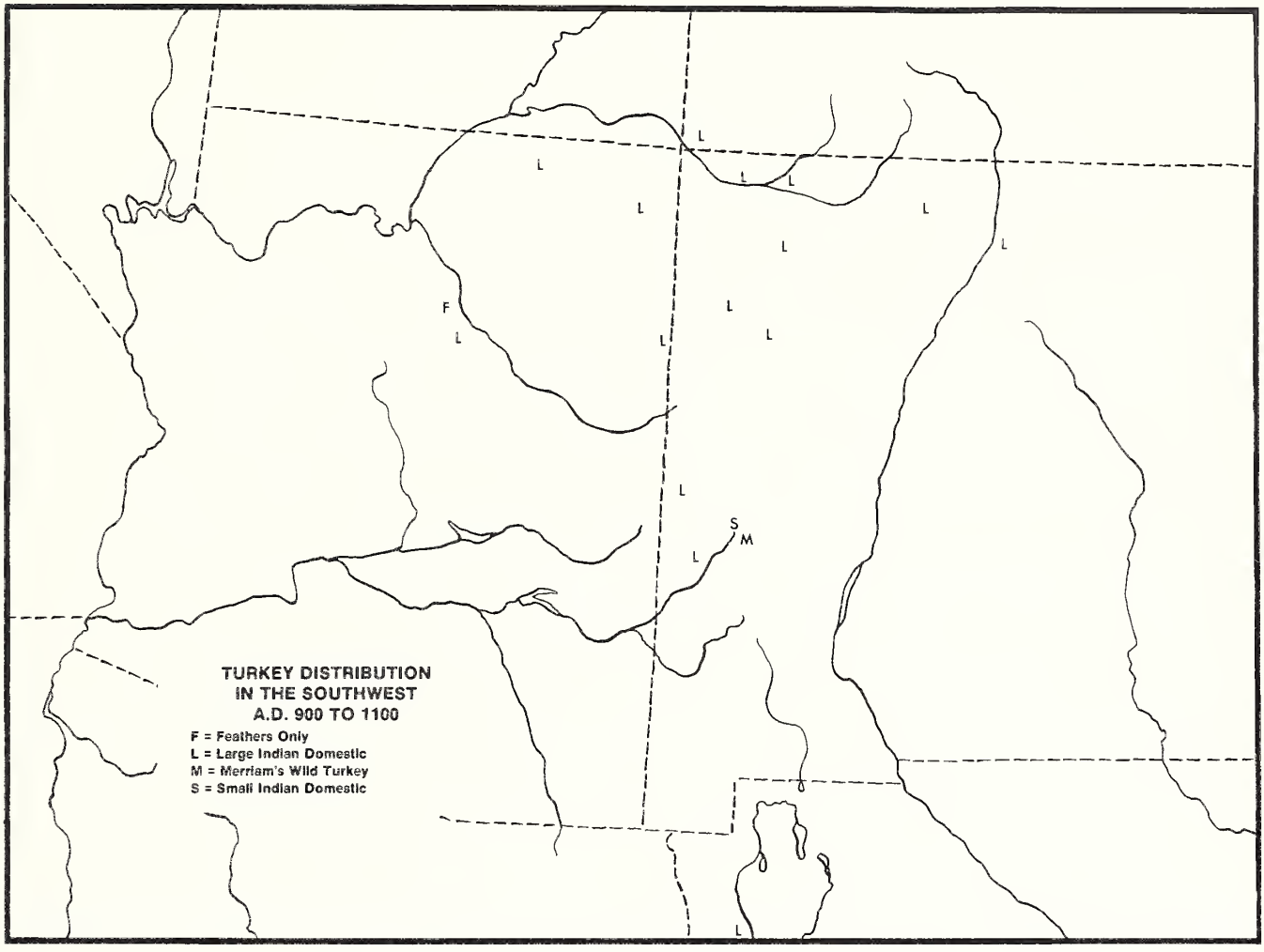

Figure 5. Turkey distribution in the Southwest from A.D. 900 to 1100.

Domestics were introduced and had an opportunity to become feral. More were hunted during the 1200's and 1300's than at any other period, but their remains never approached the number of those of domestics at the excavations in which they were found.

2. Reed's hypothesis (1951) that turkeys were eaten mostly by the northern Anasazi and their cultural descendents.

This is generally true for the Large Indian Domestic Breed. It is interesting to note that no Small Indian Domestics turn up as food refuse anywhere in the Southwest, with the possible exception of one sample at Antelope House, Canyon del Muerto, Arizona. Greatest food use of turkeys occurs on the Mesa Verde, Colorado, and at some of the Rio Grande Pueblos in New Mexico, and involves only Large Indian Domestics. Minor food use of Merriam's Wild Turkeys occurred late, in the 1200's and 1300's, and only along the Mogollon Rim of Arizona and New Mexico.

3. Johnson's hypothesis (1965) that hunting turkeys rather than raising them was a diagnostic trait of Western Pueblo Culture.

Of 17 Western Pueblo avian collections examined, domestic turkeys were present in 16 and wild turkeys in only 6. Thus, turkey hunting does not appear to be diagnostic for Western Pueblo Culture, and is probably a function of geographical location.

4. Hargrave's hypothesis (1963) that Pleistocene forms were present in southwestern archaeological sites.

I have discarded this hypothesis in light of present evidence. The specimens he set aside as not conforming to the general population of turkeys from archaeological sites have subsequently proved to be either immature forms of the Large Indian Domestic, or adults of the Small Indian Domestic.

5. The Hargrave/Rea hypothesis (1963) that southwestern wild turkeys are the descendents of feral domestics, rather than that Indian domestics were the descendents of indigenous wild forms.

Available data support this hypothesis. Rea (this vol.) has demonstrated that a different species of turkey was the indigenous inhabitant of most of the Southwest. Further, Merriam's Wild Turkey appeared in the Southwest subsequent to the spread of the Large Indian Domestic to which it is clearly related.

6. McKusick's hypothesis (1968) that turkeys were brought into the Southwest already domesticated from somewhere else as part of the Formative Cultural Complex.

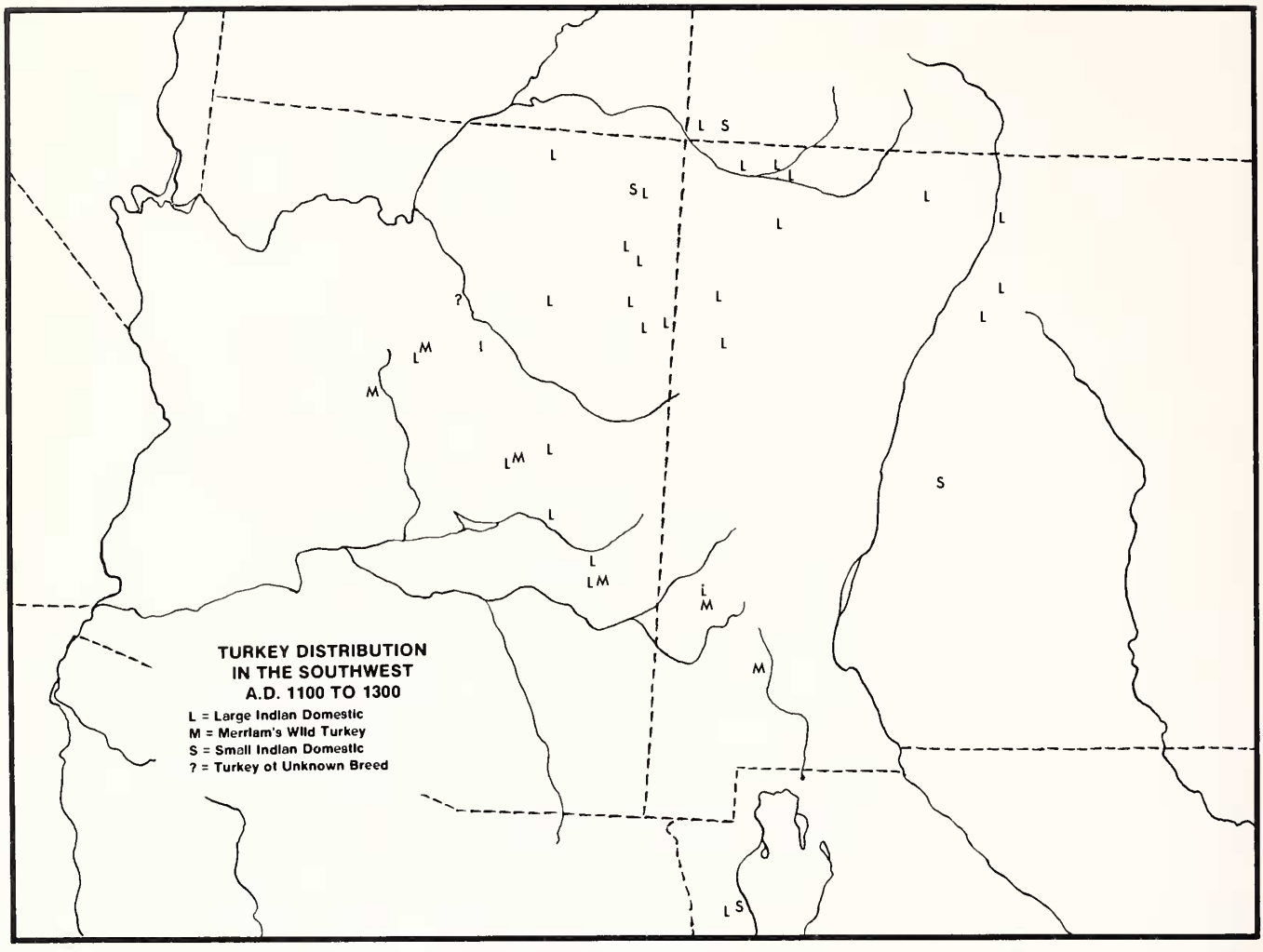

Figure 6. Turkey distribution in the Southwest from A.D. 1100 to 1300.

This hypothesis has also held up well. All early turkeys are identifiable as members of two well-standardized domestic breeds. The only evidence of local domestication in the Southwest is at Point of Pines, Arizona, where feral Large Indian Domestics (i.e., Merriam's Wild Turkeys) were apparently redomesticated.

No forms of *Meleagris gallopavo,* domestic or wild, are found in the Southwest proper before the advent of Formative Level Culture, first in the Mogollon Area, and much later, in the Anasazi Area. This is reasonable if one considers that the only way domestic turkeys could have been maintained in the circumstances in which they are known to have occurred is if there were a reliable agricultural surplus (Rea this vol.).

Where the domestics came from is still unknown. The Large Indian Domestics in their feral form did well in the mountains of the Mogollon Rim, but the Small Indian Domestics do not appear to have gone feral. Rea (pers. comm.) has suggested that this may indicate physiological as well as morphological differences between the Small and Large Indian Domestics, a possible result of the former having originally come from an area that was ecologically very different from the Southwest. The Small Indian Domestics were a small, dark-plumaged breed that, following Bergman's Rule and Allen's Rule (Van Tyne and Berger 1959:358), one would expect to inhabit a warm, moist environment. The arid Southwest was apparently inappropriate for their survival in the wild.

CONCLUSIONS

A review of the specimens of turkeys known to date from archaeological sites in the Southwest indicates that research into the origin and distribution of turkeys has been adversely affected by a basic misconception. The preconception that Indian turkeys were domesticated from birds native to the area has stood in the way of fruitful research for more than 40 years. Steadman (this vol.) and Rea (this vol.) have now corrected this misconception. The Indian domestics came from elsewhere, probably relatively far away, because the turkeys presently surrounding the area—the Rio Grande Turkey, *Meleagris gallopavo intermedia*; Gould's Wild Turkey, *M. g. mexicana*; and the South Mexican Turkey, *M. g. gallopavo*—are clearly not involved in the ancestry of the Small Indian Domestic, *M. g. tularosa,* and I am unable to find characters connecting any of them with the ancestry of the Large Indian Domestic, *M. g. merriami.*

As introduced domestics, Indian turkeys take on a different

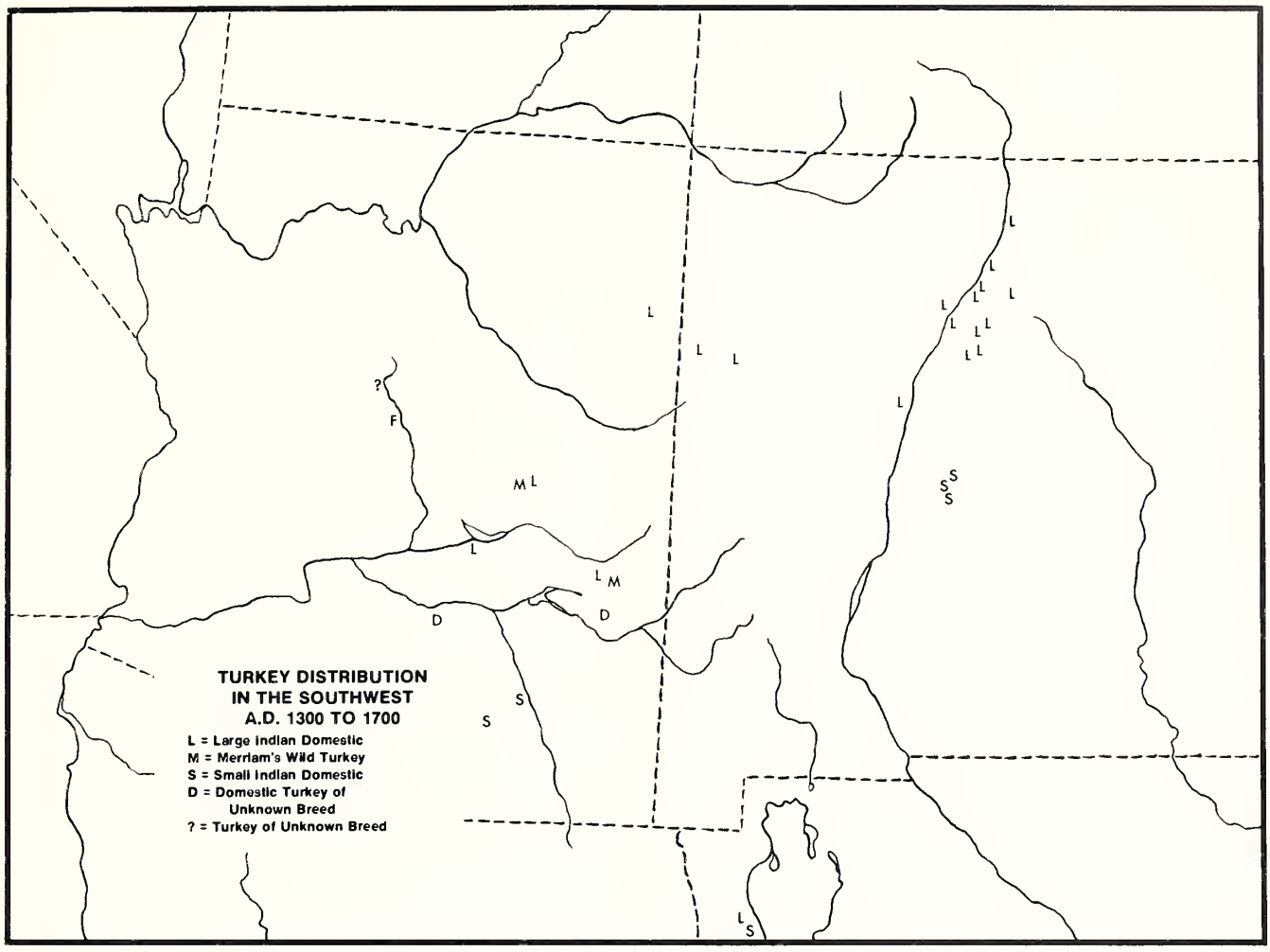

Figure 7. Turkey distribution in the Southwest from A.D. 1300 to 1700.

role than that to which the southwestern archaeologist has become accustomed. They are as characteristic of a people as are their pottery designs or their ceremonial paraphernalia. They are useful aids in tracing trade routes and movements of people. Their propagation and use is determined by cultural factors, not by ecological considerations.

The study of avian remains from southwestern sites began as an attempt to reconstruct prehistoric climate. Time and experience, however, have made it evident that certain portions of the avifauna are poor indicators of prehistoric climate. Southwestern Indians persistently went great distances, in some cases many hundreds of kilometers, to procure the birds they desired while ignoring locally available species. Therefore it is not surprising that the southwest Indians also brought domesticated turkeys from somewhere beyond the general area of their habitation.

The keeping of domestic turkeys presupposed a Formative State of Culture, when agriculture was already well enough established to provide a year-round surplus of food. In the Southwest, the Formative Stage is known earliest, about 300 B.C., in the Mogollon Area. As to be expected, the earliest turkeys in any southwest archaeological sites are also found in the Mogollon Area, as exemplified by the Small Indian Domestics at Tularosa Cave, that date from 300 B.C. ± 150 to 200 years. The next record of the Small Indian Domestic is at Canyon del Muerto, ca. A.D. 250, but the breed was not generally favored by the Anasazi, though a few apparently persisted at Antelope House through the Pueblo III occupation. On Mesa Verde, the few Small Indian Domestics present at Long House and Mug House date to ca. A.D. 1275 to 1300. At Casas Grandes, Chihuahua, Small Indian Domestics apparently interbred with Large Indian domestics. Why this hybridization should have occurred here is uncertain, but the peculiar nature of the site may shed some light on the problem. Casas Grandes, Chihuahua, was a trading outpost of Mesoamerica. Manufactured goods were produced and traded for raw materials and regional specialties. Turkeys from the American Southwest were apparently traded south in exchange for macaws. In the Mogollon and Anasazi Culture Areas, Small Indian Domestics and Large Indian Domestics co-existed for long periods without any discernable mixing, perhaps as the result of a cultural factor: that is, turkey strains may have been the property of kinship groups (in the same manner as, for example, seed corn), and may have been maintained as separate property. It may be that turkeys traded south to Casas Grandes entered a different cultural configuration, where they were merely merchandise, and where cultural factors that may have kept the strains separate in the north simply did not exist.

Small Indian Domestics were most numerous at the Tompiro Pueblos of central New Mexico. They were present there from ca. A.D. 1275 until the breed disappeared in A.D. 1672 with the fall of Las Humanas Pueblo at Gran Quivira National Monument.

The Large Indian Domestic appeared in the Southwest some time during the Basket Maker III Period, between A.D. 400 and 700. The vast number of turkey burials in Canyon del Muerto (Morris 1941), plus the rapidly increasing numbers of feather cord robes present in remains from the end of the previous period, suggest that a date of A.D. 400 to 500 for introduction of the breed is conservative. By A.D. 600 the Large Indian Domestic was already the most numerous turkey race in the Southwest. Its greatest areal expansion is coincidental with the Pueblo II Anasazi expansion that took place between A.D. 900 and 1100 (see Willey 1966:207, Fig. 5). Large Indian Domestics make up the greatest percentage of turkey remains at nearly all sites from A.D. 600 through 1672, when large flocks of domestic turkeys were last noted (Schroeder 1968:102–103).

Merriam's Wild Turkey was present by A.D. 600; it is not known before the time at which the Large Indian Domestic became the predominant southwestern breed. Analysis of plant remains from Tularosa Cave (Martin et al. 1952:469) outlines a regression of Mogollon Culture in the Georgetown Phase, A.D. 500 to 700, in which the Mogollon people dealt with some crisis in their way of life by retreating for 200 years into the Archaic Cultural Stage. Since we know that Indian domestic turkeys were already well established in their culture, it is reasonable to suppose that turkeys that may not have been adequately tended during this more mobile hunting and gathering period either died or became feral. No feral Tularosa Turkeys have ever been found, and the Small Indian Domestics that were not cared for probably died. However, feral Large Indian Domestics seem to have survived rather well, and are still with us today as Merriam's Wild Turkey.

The only experiment in turkey domestication that can be demonstrated in the entire Southwest, at any period, took place at Point of Pines, Arizona. There, at the base of Nantak Ridge, a classic population of Large Indian Domestics shows late admixtures of wild characters and an unprecedented increase in size. These fine big birds have been found at Casas Grandes, Chihuahua, and perhaps were traded for macaws, since macaws from AZ W:10:50 and Chih. D:9:1 show simultaneous identical abnormalities (McKusick 1974).

Thus, we have the Small Indian Domestic that may have persisted in small numbers for 1900 years, from as early as 300 B.C. to A.D. 1672; the Large Indian Domestic that was present in the Southwest for only about 1200 years, although in much greater numbers than the Small Indian Domestic; and the feral descendent of the Large Indian Domestic, Merriam's Wild Turkey, which has been around for 1400 years, and appears likely to persist given modern game management practices.

One factor that has become evident, but that was not considered in any of the hypotheses tested, is the relationship of the turkey to Mesoamerican socio-religious practices. While the occurrences of the macaw in the Southwest, both at Casas Grandes, Chihuahua, México, and in the United States, are recognized as a function of the ebb and flow of the popularity of the Quetzalcoatl Cult, little attention has been paid to the place of the turkey in this complex. Burland and Forman (1975:55–56) explain Quetzalcoatl, the Feathered Serpent, as the manifestation of the intellectual-conscious side of the human mind. However, Quetzalcoatl has a Dark Twin, Tezcatlipoca, The Smoking Mirror. The Smoking Mirror is made of polished obsidian and used for scrying (crystal-gazing as an aid to clairvoyance), thus Tezcatlipoca represents the intuitive-subconscious side of the human mind.

During the review of desiccated specimens of turkey remains for this paper, I found that there are several occurrences of the desiccated feet of turkeys that were tucked into dark corners of rock shelters, particularly in the area of Canyon de Chelley and Canyon del Muerto. Just as the macaw is the sign of Quetzalcoatl, so the turkey leg with claws is the sign of Tezcatlipoca (Burland and Forman 1975:61). These desiccated turkey feet date to ca. A.D. 1100, the point in time of the greatest frequency of macaw remains in the northern Southwest (Di Peso 1974). Certainly it would seem desirable to note occurrences of desiccated turkey feet from future excavations, like those from Tularosa Cave and the area of Canyon de Chelley and Canyon del Muerto to determine if other such parallels are present.

This reassessment of turkey remains from archaeological sites in the southwestern United States and some areas of México indicates three separate centers of turkey breeding:

1. The South Mexican, where domestic turkeys, *Meleagris gallopavo gallopavo,* were known in the Tehuacan Valley between A.D. 200 and 700 (McNeish 1964).

2. The Mogollon, where Small Indian Domestics, *Meleagris gallopavo tularosa,* were present between 300 B.C. ± 150 to 200 years.

3. The Anasazi, where Large Indian Domestics were probably present by A.D. 400 to 500.

Breeding per se was not successfully accomplished at all sites where turkey remains were found, and it was probably not even attempted at all sites. The frequency of turkey eggshells and small poults is highest at sites that could be considered trade centers. These are the same sites that yield such faunal remains as macaws, mountain lion and bear bones in ceremonial contexts, and human-bone artifacts. In most cases, neighboring smaller sites do not have eggshells or small poults. Presumably the birds were brought in as immatures from areas of specialization in turkey culture, at least from ca. A.D. 100 on.

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